



ED's DRAM Evaluation Update & Recommendations: Public Workshop

January 16, 2019





Agenda

9:30–9:45am	Welcome & opening remarks	ALJ Hymes
9:45–11am	Auction Mechanism evaluation overview: New/revised results & staff recommendations	Energy Division
11am–~noon	Q&A	Energy Division

12–1pm LUNCH

1–4pm	Improvements to the Auction Mechanism: Discussion of staff & party recommendations for improving the Demand Response Auction Mechanism	Parties ALJ Hymes
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Adjourn



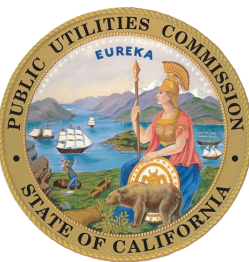


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- The evacuation site is the Garden Plaza area between Herbst Theater and the War Memorial Opera House Buildings, on Van Ness Avenue.
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Evacuation Assembly Location





Agenda

- **DRAM Evaluation Results & Recommendations Summary**
- **Evaluation Scope**
- **Evaluation Criteria (related to CAISO markets)**
 - Q4: Were DRAM bid prices competitive in CAISO's DAM?
 - Q6: Were DRAM resources reliable when dispatched in CAISO's RTM?
 - Q5b: Did DRPs aggregate their contracted capacity?
- **Staff Recommendations**
- **Q&A**





Summary

- **Staff evaluation of DRAM pilot was based on six criteria directed by Commission**
 - Included two CAISO market-related Qs: Engaged LBNL to analyze data from CAISO & SCs & DRPs/IOUs
- **Overall, pilots results were mixed, with highlights and lowlights**
 - Key issues identified in current DRAM design (lenient standards, exemptions)
- **Staff Recommendation: 5–6 year DRAM extension tied to critical improvements & oversight**
 - To improve performance, accountability, and resource value & advance CPUC objectives (D.14-12-024)
- **As per D.18-11-029, following ED's DRAM report, Commission would determine whether to:**
 1. Continue the pilot
 2. Adopt the auction mechanism on a permanent basis
 3. Adopt a revised auction mechanism based upon the evaluation results
 4. Decline to adopt any mechanism





DRAM Pilot Procurement & Budgets

Aug MWs	I	II	III-A	III-B	IV	Total	Annual Average
Delivery Year =>	2016	2017	2018	2019	2019		
SCE	20	56	89	99	73	338	84
PG&E	17	56	79	90	73	316	79
SDG&E	3	12	14	16	17	61	15
Total	40	125	182	205	163	715	179

IOU Budget (\$Millions)	I	II	III-A	III-B	IV	Total	Annual Average
SCE	\$4	\$6	\$6	\$6	\$6	\$28	\$7
PG&E	\$4	\$6	\$6	\$6	\$6	\$28	\$7
SDG&E	\$1	\$1.5	\$1.5	\$1.5	\$1.5	\$7	\$1.75
Total	\$9	\$13.5	\$13.5	\$13.5	\$13.5	\$63	\$15.75

Note: Procurement MWs are rounded; year shown is year of contract delivery.





DRAM Evaluation Summary Results

	Evaluation Criteria*	Results
1	Did DRAM engage new, viable DRPs?	<i>Yes, but some were not viable</i>
2	Did DRAM engage new customers?	Yes
3	Were DRAM auction bid prices competitive?	<i>Mostly yes</i>
4	Were DRAM offer prices competitive in wholesale markets?	No, but not unexpected per current pilot design
5	Did DRPs aggregate their contracted capacity?	Improving, but inconclusive (exposed key program design issue to fix)
6	Were resources reliable when dispatched?	Mixed; some DRPs delivered reliable performance, others did not





Scope of Evaluation – Q4 & Q6

- **DAM (Day-Ahead Market) only**
- **Focus on PDR (no RDRR)**
 - *Except SCE's Summer Discount Plan, which bid RDRR economically in the DAM*
- **June 2016 to Q1 2018 or 1H 2018 (*depending on data availability*)**
- **Additional caveats**
 - Significant learning curve and integration challenges in early phase of pilot
 - Thus, 2017–2018 data results should be weighted appropriately higher than 2016





Q4: Energy Bid Price Competitiveness

- **Commission provided no guidance on how to evaluate “competitiveness”**
- **Analyzed three proxy metrics to judge competitiveness**
 - DAM scheduling rate How often were resources awarded a schedule?
 - DAM bid price distribution How did bid prices stack up against others?
 - DAM scheduling efficiency How well did resources capture peak load hours?
- **Benchmarking DRAM vs. other resources serving peak load**
 - DRAM: Non-Res | Res | BTM storage
 - IOU DR
 - LCR BTM storage
 - IFOM utility storage
 - Gas peakers





Target Activity Level (Scheduling Rate)?

- **Expectations for activity level driven by DR dispatch purpose:**
 - Reduce system peak load
 - Alleviate high energy prices (grid stress)
 - Reliability events
- **Suggest minimum 30 hours of dispatch (at full utilization) over 6 months (May–October) as target → 2.3% scheduling rate**





DAM Scheduling Rates: Select Data Points

- **Scheduling Rates (%) = Energy Awarded / Energy Bid within AAH**

Anonymized, Randomized DRP/IOU Scheduling Rates*

DRP/IOU	DRPa	DRPb	DRPc	DRPd	DRPe	IOU DRa	IOU DRb
Rate	0.65%	3.04%	1.53%	0.18%	17.58%	1.27%	13.53%

- **DRAM resources were infrequently scheduled & the least active resource type**
 - Some DRPs were MIA, as they received few/no DAM awards

*Note that selected data points are in no particular order and reflect various time periods including June-December 2016, 2017, and Q1 2018.





Q4 Metrics: Scheduling Rates

- DAM scheduling rates (averaged over period: June 2016–March 2018, within AAH)



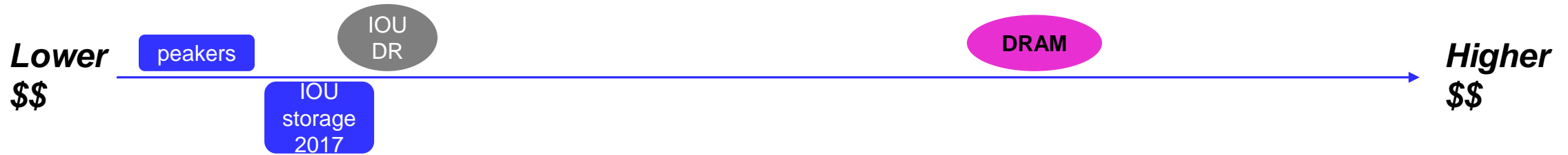
- Apparent that DRAM resources were far less active than other resource types





Q4 Metrics: Bid Price Distribution

- DAM bid prices (averaged over period: June 2016–Dec 2017, within AAH)*



- Apparent that DRAM bid prices were far less competitive than for other resource types

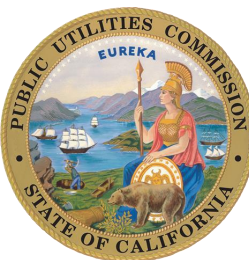
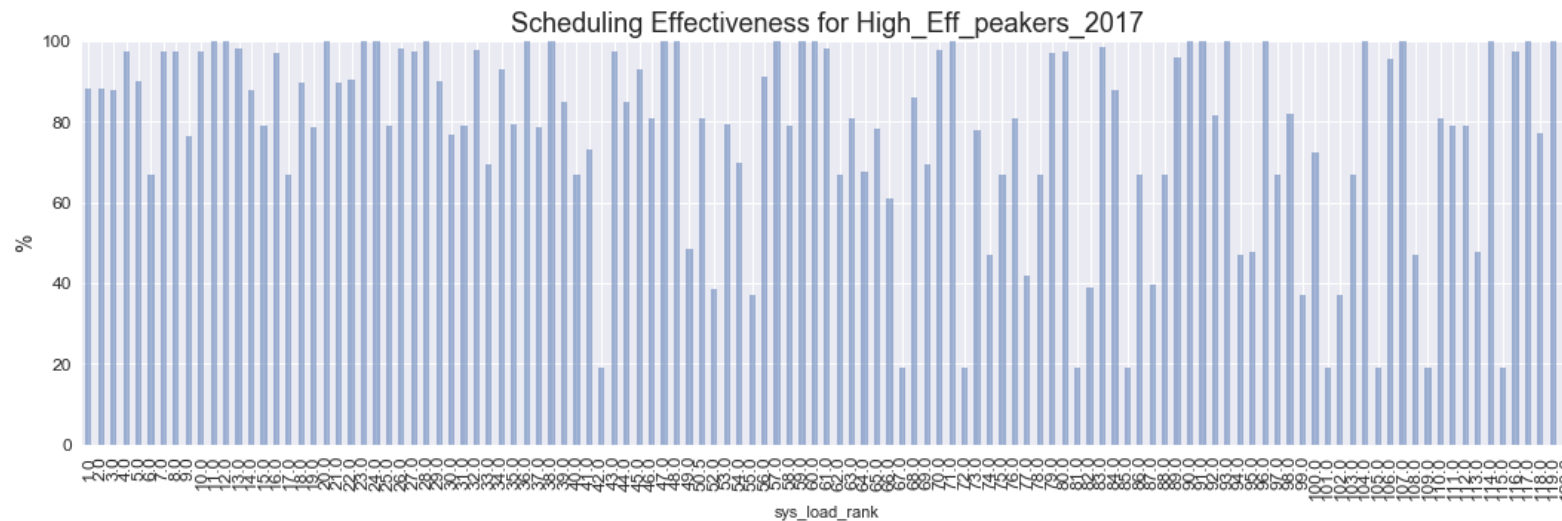
*Note that analysis was limited to data provided under CAISO subpoena— on the highest bid price on a supply curve per trade hour (often merely equivalent to LMP at that node) rather than all bid prices per resource increment.





Q4 Metric: Scheduling Efficiency (during 120 Highest Load Hours)

- **Scheduling Efficiency** = Energy Awarded in Peak Load Hrs/Available Contracted Capacity
- Gas peakers scheduled frequently during system peak load hours
- **DRAM resources scheduled far less frequently during same hours**
 - This suggests peak load reduction may not be a driver for DRAM bids





Program Factors Driving Resource Utilization

	LCR BTM Storage	IOU DR	DRAM (Current Design)
Dispatch control	IOU	IOU	3P
Marginal dispatch cost	Set in contract	Trigger set by CPUC	Perceived by DRPs to be high
Dispatch activity affects offer selection	Yes	N/A	No
Impact on customer service level	None (dedicated capacity)	Yes	Yes
Motivation to maximize energy value	Fiduciary responsibility	Fiduciary responsibility	Not clear
Expectations for # of dispatch hours	High	CPUC guidance	Minimal: 2016/2017: One test; 2018: One test or dispatch per 6 months & August dispatch
Factor encourages more dispatch activity			



Q6: Market Performance Reliability

- **Possible Performance Metrics**
 - Energy delivered / DAM energy awarded
 - Energy delivered / RTM energy expected
- **Issues with CAISO settlement files**
 - Missing data for RTM energy delivered
 - Receipt of RQMD from IOUs sometimes delayed beyond 55-day settlement period
 - DRPs not pursuing corrections of CAISO settlement data due to costs
 - Numerous zeros observed for RTM energy delivered; numerous ‘events’ missing
- **Performance highly influenced by baseline methodology**
 - Generally using CAISO 10-in-10 baseline to date
 - Starting Nov. 2018, CAISO allowing multiple baseline options





Market Performance Reliability

- **Dispatch Performance = Energy Delivered in RTM / Energy Awarded in DAM**

Anonymized, Randomized DRP DAM Dispatch Performance

DRP	DRPa	DRPb	DRPc	DRPd	DRPe	DRPf	DRPg
Performance	92%	35%	39%	113%	73%	1.23%	78%

- **Mixed performance across DRPs**
 - Some performed well and delivered reliable dispatch performance
 - Others essentially failed to perform
 - Some mostly MIA, with few DAM awards/dispatches





Q5: Capacity Aggregation

- **Improving record in DRPs aggregating contracted capacity in 60-day Supply Plans (SP) & Demonstrated Capacity (DC)**
 - 2017 & 1H 2018 results substantially improved over 2016

Alignment of Supply Plans & Demonstrated Capacity with Contracted Capacities

All Data in % of Contract Capacity	% in Supply Plan	% in Demonstrated Capacity
DRAM I	65% of MW	58% of MW
DRAM II	90% of MW	88% of MW
DRAM III (1H 2018)	97% of MW	86% of MW

- **But ED staff regards results as inconclusive at best given key program design issue (i.e. lack of CPUC-approved ex-ante forecasting method to validate Supply Plan capacity)**





Staff Recommendations for Improvements in DRAM Design

Divided in 4 areas

Solicitation

- ✓ Improved valuation of selected offers
- ✓ Increase competition and limit market share

Performance

- ✓ Better accountability and certainty
- ✓ Strengthen penalties for non-performance

Contracts

- ✓ Eliminate loopholes
- ✓ Ensure fairness and transparent processes

Program & Oversight





Recommendations: Program Authorization & Oversight

- **Authorize 5–6 year program budget with multiple solicitations**
 - Consider incrementally increasing budget over this period
 - Provides continuity for market development
 - Multi-year contracts potentially more economic for IOUs/ratepayers
- **Develop process for ongoing monitoring and design tweaks**
 - Consider stakeholder process with ED resolutions to revise design
- **Authorize proper budget for evaluation by independent consultant**
 - IOU contract with ED selection and management of consultant
 - Target evaluation in mid 2023 (include delivery years 2019 and 2021–2023)





Recommendations: Solicitation (1)

- Consider limiting market share of any one provider/affiliate to 25%
- Limit residential set-aside to new sellers to encourage diversity
- Include voluntary dispatch commitment bid parameter to increase value
- Require up-front bid fees to ensure that offers are serious





Recommendations: Solicitation (2)

- **Drop simple average August bid price cap**
- **Modify NMV/LRAC filter**
- **Review qualitative criteria**
 - Include performance factors & exclude factor penalizing suspected violations
- **Require IOUs to publish summaries of awarded DRAM contracts**
 - Also require clear monthly reporting of DRAM admin costs





Recommendations: Capacity Performance

- **Require progress milestones**
 - Contract execution => RA showing
- **Establish ex-ante basis for Qualifying Capacity in Supply Plans**
 - Presently, none exists => RA uncertainty, inconsistent practices, disputes
- **Add penalty for Qualifying Capacity falling short of contracted capacity**
- **Establish minimum dispatch activity level**
 - Suggest 30 hours during RA measurement hours





Recommendations: **Market Performance**

- **Require invoices based on market dispatch results when available**
- **Cap Demonstrated Capacity on MOO-based invoices to actual performance**
- **Add financial penalties/incentive payments for under or overdelivering performance in CAISO energy market**
- **Require periodic performance reports to CPUC**





Recommendations: Contract Improvements

- **Improve process for reassigning contracts; allow contract partitioning**
- **Include deadlines for seller submission of invoices**
- **Clarify guidelines re: IOU audits of Demonstrated Capacity invoices**
- **Clarify dispute resolution process & IOU discretion to adjust invoices, etc.**
- **Strengthen provisions re: IOU obligation to deliver timely RQMD**
- **Condition IOU payment of invoices on seller meeting CPUC registration requirements**





Recommendations: Other Improvements

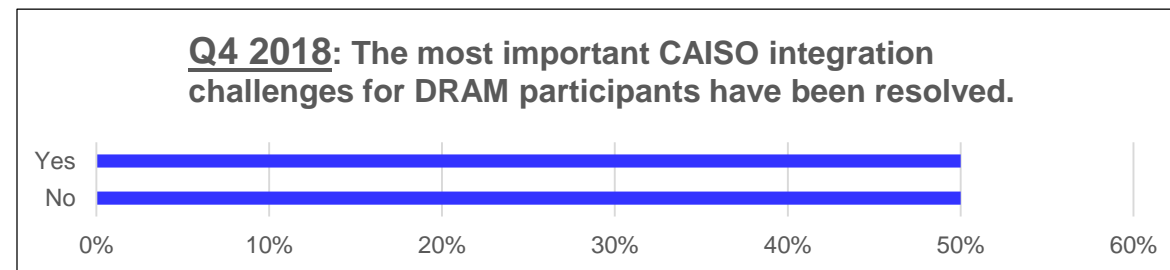
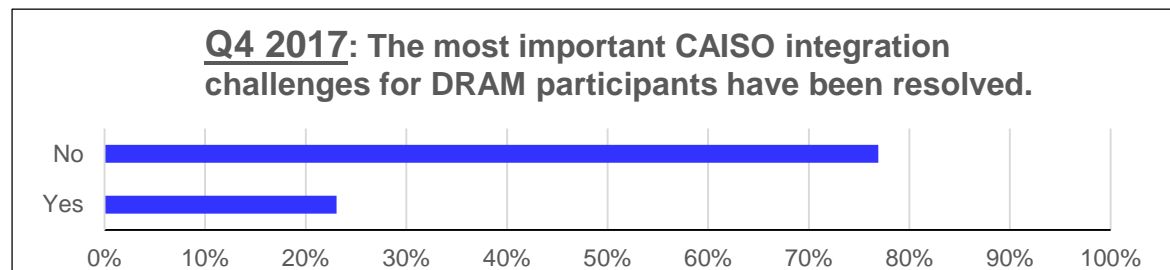
- **Waive CPUC-specific review/approval of DRAM contracts**
- **Evaluate potential changes in procurement focus**
 - Consider transitioning from System to Local/Flex RA
 - Exclude RDRR from DRAM in absence of formal LIP & IOU right to trigger
- **Pursue collaborative process with CAISO/stakeholders to resolve:**
 - Confusion around CAISO's compensation adjustments in the settlement process
 - CAISO data issues, settlement errors
 - CAISO system integration challenges, RTM bidding requirements
 - IOU system integration challenges





Q4 2017 & Q4 2018 Survey Results: CAISO/IOU Integration Challenges

- Improving resolution of CAISO integration challenges noted in report



- IOU integration challenges remained prominent as of YE 2017
(no viable 2018 data available)

